

## **NPS/DSC CAD Drafting Standards Checklist for Electronic Deliverables**

More information on DSC's CAD standards can be found at: <http://cadd.den.nps.gov>

### **Purpose**

This document is a condensed and partial checklist of items to assist in following the Denver Service Center's (DSC) CAD drafting standards. Please refer to Director's Order 10 (NPS-10) and the DSC CADD User's Guide (referred to below as "DSCCUG") for more complete information about CAD standards and the "NPS AutoCAD Tools". When there is conflict, information here supercedes the May 1999 issue of the DSC CADD User's Guide.

### **Definitions**

#### **Cover Sheet**

The title sheet of a drawing set. Typically includes a map of the project area and index of the sub sheets.

#### **Sub Sheet**

One drawing of the printed set, but not the cover sheet. External Reference (xref) base drawings are not sub sheets.

#### **External Reference (xref) Base**

A drawing file which is linked into sub sheet(s), but is not printed directly as part of the drawing set.

### **Project Setup**

- All CAD drawings will be done in AutoCAD.
- Drawing files will be stored in the DSC folder structure, i.e. [park] \ [package or pmis] \ [phase] \ [discipline]. See DSCCUG page 2-1.
- Drawing filenames will conform to the DSC drawing file naming conventions. See DSCCUG page 2-1.
- Each sub sheet will be created as an individual .dwg file, using external references for the sharing of information when necessary. One .dwg = one sub sheet.
- Do not use multiple paperspace layouts to create more than one subsheet per .dwg file.
- Begin new drawings using a template drawing (.dwt) of the appropriate discipline. Template drawings are included with the "NPS AutoCAD Tools".

### **Drawing Practices**

#### **General**

Use modelspace/paperspace where modelspace contains the model at "real life" size. Paperspace contains the border/title block, and non-model related objects such as north arrow, scale bars, schedules, notes. Printing is done from paperspace at 1:1 scale for full-size prints, 1:2 scale for half size prints. Drawing scale(s) are achieved with viewport(s). All drawings use color dependent plot styles, not named plot styles.

### External References

Xref base files should be in the "DSC folder structure" (see DSCCUG page 2-1), and relative xref paths used. By using relative xref paths, when the project files are transferred to CD-ROM in the same "DSC folder structure", subsheets will open and load xrefs successfully. Creating a P: drive as mentioned in the DSCCUG is not necessary when using relative xref paths. Attach or overlay xrefs at coordinates 0,0,0 unless absolutely necessary to do otherwise.

### Layers

Layer names will conform to the DSC standard and all objects will be drawn on the appropriate layer. Refer to DSCCUG page 2-4 for layer name conventions, and DSCCUG Appendix A for layer listings by discipline.

To import standard layers into an existing drawing, use these layer settings (.las) files. When beginning new drawings, use a drawing template.

### Colors/Lineweights

All colors used in drawing files will comply with the DSC Pen/Color configuration chart. See DSCCUG page 4-3, or the NPS Pen/Color reference chart.

### Lettering

Only romans.shx and arch.shx are to be used for text characters, with the exception of special font files from Land Development Desktop or legacy drawings converted from Autotrol software. It is suggested to use the TWIZ (Text Wizard) command, which is included with the NPS AutoCAD Tools, to setup text styles that conform to the DSC standard.

### Text heights used:

Use	Printed Height	Pen Width	Colors
Standard text and dimensions	0.13	0.017	White (7), 39, 71, 103, 135, 167, 199, 231
Sub-titles, headings	0.14	0.021	Red (1), 33, 65, 97, 129, 161, 193, 225
Plan titles, detail titles, section or detail call outs.	0.175	0.026	Yellow (2), 34, 66, 98, 130, 162, 194, 226
Absolute minimum text height, used for stacked fractions, symbols	0.10	0.013	Magenta (6), 38, 70, 102, 134, 166, 198, 230

### Dimensioning

It is suggested to use the DWIZ (Dimension Wizard) command (included with the NPS AutoCAD Tools) to create dimension styles which conform to the DSC standard. See DSCCUG page 4-5.

## **Page Setup/Plotting**

### Paperspace/layout configuration

- Drawings are to be plotted using paperspace.
- Unit of measurement in paperspace is inches if imperial, millimeter if a metric drawing.
- DSC's border/title block will always be inserted at full size (border is 21" x 31 3/4" or 533mm x 806mm).
- Full size plots are achieved by plotting at a 1:1 scale. Half size plots are achieved by plotting at a 1:2 scale.
- One Paperspace layout for both half-size and full-size prints. If you intend to print both half-size and full-size prints, use ONE Paperspace layout for both configurations. Please DO NOT create two layouts - one half-size, one full-size. Using different page setup settings, one layout can easily be used to print both half-size and full-size.
- Only one .ctb pen settings file is required (AutoCAD 2000+) for both half-size and full-size prints. (The trick is to use the "Scale lineweight" feature.)
- Use the NPS supplied file, NPS\_HP\_GRAYSCALE.ctb, which is included with the NPS AutoCAD Tools, or downloaded separately by clicking [here](#).  
Standard paper sizes are 22" x 34" for full-size prints, and 11" x 17" for half-size prints.
- All drawings (linework, text, etc.) must be legible when printed half-size.
- Each subsheet will be created as an individual .dwg file. One .dwg = one subsheet. Do not use multiple paperspace layouts to create more than one subsheet per .dwg file.
- No objects drawn outside the rectangular border lines (allows print area using "Extents").
- Viewport objects should be visible (not on an off or frozen layer). Use non-printing color to hide viewport border on print.

### **Drawings will be printable using the following page setup/plot settings:**

- Plot area: Extents
- Scale (full size prints): 1:1
- Scale (half size prints): 1:2 with "Scale lineweights" checked (AutoCAD r2000+)

### **Title Block/Border**

- Use DSC's title block, not a modified version of it. See DSCCUG page 3-1. Cover sheet, second sheet, plan & profile, and survey borders may be downloaded [here](#).
- Don't explode or "burst" the title block
- No paper-trim lines, or if they are necessary, put them on a separate layer that is frozen before drawing is given to DSC. Paper-trim lines should not be part of the border/title block.
- All drawings shall include a drawing tag that includes date/time of last save, user name, the AutoCAD release version, drawing path & filename, and xref list. See DSCCUG page 3-4. An automatic drawing tag feature is included in the NPS AutoCAD Tools.